

REMARKS

Claims 13 and 35 are amended. New claim 36 has been added.

Before responding to the rejections, it may be helpful to briefly discuss the nature and significance of the invention. The present invention is a filter element composed of a plurality of filter media layers of successively increasing degree of separation and decreasing storage capacity commencing with a melt-blown synthetic fiber inflow layer and ending with a predominantly cellulose containing compressed filter paper discharge layer. The filter element of the invention provides enhanced filtration performance compared to comparably sized conventional filter media. Increased filter performance is achieved by using melt-blown fibers of small diameter. Because such fine melt-blown fibers require support, it has been customary in the art to provide such filter layers with a stable support layer. This, however, wastes space and adversely affects filter performance since the support layers are relatively thick but have no filter functionality, but only serve as supports. Increased performance is also achieved by using successive layers which become progressively finer in the direction of flow. Because cellulose fibers are relatively coarse (i.e., have comparatively large diameters), the wisdom of the art has been to avoid the use of cellulose fibers for the finest filter layers. Instead, it has been customary to use layers of finer fibers supported by a porous support as described above.

The present invention breaks new ground by using a predominantly cellulose-containing compressed filter paper having a weight per unit area of at least about 50 g/m² as the discharge layer. The compressed cellulosic paper

serves both as a support (which is needed, e.g., for pleating and for mechanical stability) and as final fine filteractive layer. (See the paragraph bridging pages 2 and 3 of the instant specification.) The combination of a melt-blown initial filter layer, which has a lower filtration efficiency but a higher dirt holding capacity, and a final compressed cellulosic fine filter layer which has a high filtration efficiency, produces a filter element of enhanced effectiveness in which the entire thickness is filteractive.

The filter material of the invention has recently become commercially available under the trade name Mann & Hummel MULTIGRADE_F and has been very successful in the marketplace. Because of its enhanced filter performance it has captured a rapidly increasing share of the OEM market and has to a great extent supplanted competitive materials from other manufacturers. Counsel is advised that imitations are now starting to appear. With these points in mind, we turn now to the rejections.

The rejection of claim 21 under 35 U.S.C. §112, first paragraph, is respectfully traversed. Claim 21, as currently amended merely recites that at least one cellulose containing filter layer includes up to 50% of synthetic fibers. Explicit support for this is found, *inter alia*, in the at page 3, lines 6-8 from the bottom and in original claim 11. Reconsideration and withdrawal of the rejection are therefore respectfully requested.

Reconsideration and withdrawal of the rejection of claims 13, 15-22 and 35 under 35 U.S.C. §112, second paragraph, are also respectfully requested.

With respect to the phrase “predominantly cellulose containing filter paper”, the specification at page 3 does not teach cellulose contents of “up to 50%” as alleged in the Office Action. Instead, page 3 of the specification indicates that the cellulose containing filter papers can contain up to 50% of a **foreign substance** such as glass or polyester fibers. No inconsistency or indefiniteness is seen.

Moreover, there is no basis for the assertion in the Office Action that the “common dictionary meaning” of the term “predominantly” necessarily implies amounts of more than 50%. No such dictionary definition has been cited. The only dictionary definition of record is that cited on page 11 of Applicants’ Appeal Brief, which merely defines it as “having greatest importance, most common or conspicuous, main or prevalent.” To the same effect see the definition in the attached copy of *Webster’s New World Dictionary*, where “predominant” is defined as “most frequent, noticable, etc.; prevailing or preponderant.” In a three part mixture of 50% cellulose, 25% glass fibers and 25% polyester fibers, under these definitions the cellulose would clearly be the predominant constituent, notwithstanding the fact that it is not present in a proportion of over 50%.

Claims 13 and 35 have been amended to use consistent terminology to refer to the layer weights per unit area as no differences were intended.

As explained in the specification in the paragraph bridging pages 4 and 5, the compressed cellulose containing filter layer either by compression during the manufacturing process or by subsequent calendaring. Such processes are well understood by persons skilled in the paper art.

Finally, the phrase “during a folding process” in claim 19 means precisely what it says, that the filter element is folded and pressure is applied in the course of the folding operation. Pleating is a common example of such folding, but other types of folding are possible. For example, see the folded filter bags illustrated in Figures 2a, 2b and 2c of the cited Klimmek reference, EP 338,479.

Thus, the claims, as amended, are respectfully submitted to have a readily ascertainable meaning to persons skilled in the relevant art and to particularly point out and distinctly claim what applicants regard as their invention in full compliance with the requirements of 35 U.S.C. §112, second paragraph.

The rejections under 35 U.S.C. §103(a) of claims 13, 15-19, 21 and 35 over Kadoya in view of Sabee or Togashi; of claims 18-20 over the same references further in view of the statements on page 10 of Applicants’ Appeal Brief; and of claim 22 over Kadoya, Sabee or Togashi, and Klimmek are all respectfully traversed.

Kadoya does not correspond to the present invention. Kadoya explicitly teaches at column 3, lines 5-6 and 50-51 that his filter elements comprise a substrate 3 having a plurality of pores 5 defined therethrough. See also Kadoya’s Figures 1 through 6 which show that all Kadoya’s filter embodiments have such a porous supports. This is precisely the state of the prior art from which the present invention departs. The discharge layer of Kadoya is his porous support 3 and not a filteractive layer with the greatest degree of separation as required by Applicants’ claims. Thus, even if the melt-blown layers of the secondary references were incorporated into the Kadoya filters as

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postulated in the rejections, the result would not correspond to the presently claimed invention. Thus, the cited references fail to make out a proper, *prima facie* case of obviousness, and reconsideration and withdrawal of the obviousness rejections are respectfully requested.

In view of the foregoing amendments and remarks, the application is respectfully submitted to be in condition for allowance, and prompt, favorable action thereon is earnestly solicited.

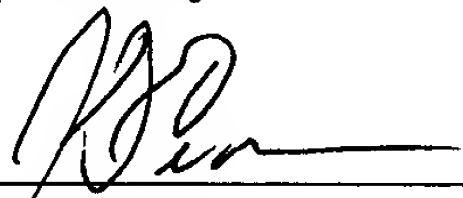
If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #178/48916).

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thing predicable 2 *Logic* any of the several sorts of predicate that can be used of a subject, as, in Aristotelian logic, genus, species, difference, property, and accident — **predicability** or **predicability-ness** *n.* — **predicably** *adv.*

predicament (prē dik'ə-mant, pri-) *n.* [ME < LL(Ec) *praedicamentum* < L *praedicare*: see **PREACH**] 1 a condition or situation, now specif. one that is difficult, unpleasant, embarrassing, or, sometimes, comical 2 [Archaic] CATEGORY (sense 2)

SYN. — **predicament** implies a complicated, perplexing situation from which it is difficult to disentangle oneself; **dilemma** implies a predicament necessitating a choice between equally disagreeable alternatives; **quandary** emphasizes a state of great perplexity and uncertainty; **plight** emphasizes a distressing or unfortunate situation; **fix** and **pickle** are both colloquial terms loosely interchangeable with any of the preceding, although more precisely **fix** is equivalent to **predicament** and **pickle**, to **plight**

predicant (prē'di kant) *adj.* [L *praedicans*, prp. of *praedicare*: see **PREACH**] preaching — *n.* a preacher; esp., formerly, a Dominican friar

prediccate (for *v.* pred'i kāt; for *n.* & *adj.*, -kit) *vt.* -cat'ed, -cat'ing [L *praedicatus*, pp. of *praedicare*: see **PREACH**] 1 orig., to proclaim; preach; declare; affirm 2 a) to affirm as a quality, attribute, or property of a person or thing (to predicate the honesty of another's motives) b) *Logic* to assert (something) about the subject of a proposition 3 to affirm or base (something) on or upon given facts, arguments, conditions, etc. 4 to imply or connote — *vi.* to make an affirmation or statement — *n.* [ML *praedicatum*, neut. of *praedicatus*: see the *v.*] 1 *Gram.* the verb or verbal phrase, including any complements, objects, and modifiers, that is one of the two immediate constituents of a sentence and asserts something about the subject 2 *Logic* something that is affirmed or denied about the subject of a proposition (Ex.: *green* in "*grass is green*") — *adj.* *Gram.* of or having the nature of a predicate [a predicate adjective] — **predicatively** *adv.*

predicator (prē'di kə-tōr) *adj.* [LL(Ec) *praedicatorius*, praising, laudatory < *praedicare*: see **PREACH**] of or having to do with preaching

predict (prē dikt', pri-) *vt., vi.* [L *praedictus*, pp. of *praedicere* < *prae-*, before (see **PRE-**) + *dicere*, to tell: see **DICTION**] to say in advance (what one believes will happen); foretell (a future event or events) — **predictability** *n.* — **predictable** *adj.* — **predictably** *adv.* — **predictive** *adj.* — **predictively** *adv.* — **predictor** *n.*

prediction (prē dik'shən, pri-) *n.* [L *praedictio*] 1 a predicting or being predicted 2 the thing predicted or foretold

pre-digest (prē'di jest', -di-) *vt.* to digest beforehand; specif., to treat (food) as with enzymes for easier digestion when eaten — **pre-digestion** *n.*

predilection (prē'di ek'shən, prēd-) *n.* [Fr *prédilection* < ML *predilectus*, pp. of *prediligere*, to prefer < L *prae-*, before (see **PRE-**) + *diligere*, to prefer (see **DILIGENCE**)] a preconceived liking; partiality or preference (for) — **SYN.** **PREJUDICE**

pre-dispose (prē'dis pōz') *vt.* -posed', -pos'ing to dispose, or make receptive, beforehand; make susceptible [fatigue predisposes one to illness]

pre-disposition (prē'dis pə zish'ən, prē dis-) *n.* the condition of being predisposed; inclination or tendency; predilection

prednisone (prēd'nī-sōn) *n.* [L *prednane*, a steroid hydrocarbon (< **PREGNANT** + *-ANE*: found in urine during pregnancy) + D(1)-1 + (E)N(E) + (CORT)ISONE] a chemical derivative, C₂₁H₂₆O₅, of cortisone, but with fewer side effects, used in the treatment of arthritis and certain allergic and inflammatory disorders

predominant (prē dām'ə nant, pri-) *adj.* [Fr *prédominant* < ML *predominans*, prp. of *predominare*: see **PRE-** & **DOMINANT**] 1 having ascendancy, authority, or dominating influence over others; superior 2 most frequent, noticeable, etc.; prevailing; preponderant — **SYN.** **DOMINANT** — **predominance**, *pl.* -cies, or **predominancy** *n.* — **predominantly** *adv.*

predominate (for *v.* prē dām'ə nāt, pri-; for *adj.*, -nit) *vi.* -nat'ed, -nat'ing [L *predominatus*, pp. of *predominare*: see **PRE-** & **DOMINATE**] 1 to have ascendancy, authority, or dominating influence (over others); hold sway 2 to be dominant in amount, number, etc.; prevail; preponderate — *adj.* **PREDOMINANT** — **predominately** *adv.*

predominance *n.* — **predominantly** *adv.*

pre-emption or **pre-empt** (prē emp't) *vt.* [back-form. < fol.] 1 to acquire (public land) by preemption 2 to seize before anyone else can, excluding others; appropriate beforehand 3 *Radio, TV* to replace (a regularly scheduled program) — *vi.* *Bridge* to make a preemptive bid — *n.* *Bridge* a preemptive bid — **pre-emptor** or **pre-emptory** *n.* — **pre-emptory** or **pre-emptory** *adj.*

pre-emption or **pre-emption** (prē emp'shən) *n.* [L *praemptio*, pp. of *praemere*, to buy beforehand < L *prae-*, before (see **PRE-**) + *emere*, to buy (see **REDEEM**)] 1 the act or right of buying land, etc. before, or in preference to, others; esp., such a right granted to a settler on public land 2 action taken to check other action beforehand

pre-emptive or **pre-emptive** (prē emp'tiv) *adj.* 1 of or having to do with preemption 2 *Bridge* designating a high bid intended to

shut out or obstruct opposing bids — **pre-emptively** or **pre-emptively** *adv.*

preen (prēn) *vt.* [ME *preynen*, altered (infl. by *preonen*, to prick with a pin < *preon* < OE, a pin) < *proinen*, to PRUNE] 1 to clean and trim (the feathers) with the beak: said of birds 2 to make (oneself) trim; dress up or adorn (oneself) 3 to show satisfaction with or vanity in (oneself) — *vi.* to dress up in a fussy way; prink or primp — **preen'er** *n.*

pre-establish or **pre-establish** (prē'e stab'lish) *vt.* to establish in advance

pre-exilic or **pre-exilic** (prē'eks il'ik; -eg zil', -ig-) *adj.* [L *praexilic*, exilic + *-ic*] of that period of Jewish history preceding the Babylonian Exile (6th cent. B.C.). Also **pre-exilian** or **pre-exilian**

pre-exist or **pre-exist** (prē'eg zist', -ig-) *vt., vi.* [L *praexistere*] to exist previously or before (another person or thing): also **pre-existent** or **pre-existent** *adj.*

pref 1 preface 2 prefatory 3 preference 4 preferred 5 prefix

pre-fab (prē'fab) *n.* [Colloq.] a prefabricated building

pre-fabricate (prē fab'ri kāt') *vt.* -cat'ed, -cat'ing 1 to fabricate beforehand 2 to construct in standardized sections for shipment and quick assembly [a prefabricated house] — **pre-fabrication** *n.*

preface (prē'fas) *n.* [ME *prefas* < MFr < ML *praefatio*, for L *praefatio* < *prae-*, before (see **PRE-**) + *fatus*, pp. of *fari*, to speak: see **FAME**] 1 [usually P-] R.C. Ch. the introduction to the Canon of the Mass, ending with the Sanctus 2 an introductory statement to a book, telling its purpose, plan, etc., esp. a brief one written by the book's author 3 something preliminary or introductory; prelude — *vt.* -aced, -ac'ing 1 to furnish or introduce with a preface 2 to be or serve as a preface to; begin — **SYN.** **INTRODUCTION**

prefatory (prē'fə tōr) *adj.* [L *praefatus* (see **PRE-**) + *-ORY*] of, like, or serving as a preface; introductory — **prefatorily** *adv.*

prefect (prē'fekt) *n.* [ME *prefecte* < OFr < L *praefectus*, pp. of *praeficere*, to set over: see **PRE-** & *-FY*] 1 in ancient Rome, any of various high-ranking officials or chief magistrates in charge of governmental or military departments 2 in modern times, any of various administrative officials; specif., a) the head of a department of France b) the chief of the Paris police 3 in some private schools, esp. in England, an older student with disciplinary authority

prefecture (prē'fek'chər) *n.* [L *praefectura*] 1 the office, authority, territory, or residence of a prefect 2 any of the regional districts of Japan administered by a governor — **prefectural** (-chər əl) *adj.*

prefer (prē far', pri-) *vt.* -ferred', -fer'ring [ME *preferen* < MFr *preferer* < L *praeferre*, to place before < *prae-*, *PRE-* + *ferre*, BEAR] 1 to put before someone else in rank, office, etc.; promote; advance 2 to put before a magistrate, administrator, court, etc. for consideration; sanction, or redress (to prefer charges against an attacker) 3 to put before something or someone else in one's liking, opinion, etc.; like better 4 to give preference or priority to (a creditor, etc.) — **preferer** *n.*

preferable (prē'fər ə bəl) *adj.* more desirable; to be preferred — **preferability** or **preferable-ness** *n.* — **preferably** *adv.*

preference (prē'fər əns) *n.* [MFr *préférence* < ML *praefereantia* < L *praefereant*, prp. of *praeferre*, to PREFER] 1 a preferring or being preferred; greater liking 2 the right, power, or opportunity of prior choice or claim 3 something preferred; one's first choice 4 a) a giving of priority or advantage to one person, country, etc. over others, as in payment of debts or granting of credit b) such priority or advantage — **SYN.** **CHOICE**

preferential (prē'fər ən'shəl) *adj.* [ML *praefereantia* (see **PRE-**) + *-AL*] 1 of, having, giving, or receiving preference 2 offering or allowing a preference [a preferential ballot] 3 designating a union shop which gives preference, as by contract, to union members in hiring, layoffs, etc. 4 receiving preferences, as in tariffs — **preferentialism** *n.* — **preferentially** *adv.*

preferential voting a system of voting in which the voter indicates an order of preference for several candidates

pre-ferment (prē far'mənt, pri-) *n.* 1 the act of preferring 2 an advancement in rank or office; promotion 3 an office, rank, or honor to which a person is advanced

preferred stock stock on which dividends must be paid before those of common stock: it usually also receives preference in the distribution of assets

pre-figuration (prē fig'yōō rā'shən, -yoo-, -yā-) *n.* 1 the act of prefiguring 2 something in which something else is prefigured; prototype

pre-figure (prē fig'yər, -yoor) *vt.* -ured, -uring [ME *prefiguren* < LL(Ec) *praefigurare* < L *prae-*, *PRE-* + *figurare*, to fashion: see **FIGURE**] 1 to suggest beforehand; be an antecedent figure or type of; foreshadow 2 to picture to oneself, or imagine, beforehand — **pre-figurative** (-yoor ə tiv, -yər-) *adj.* — **pre-figuratively** *adv.* — **pre-figurative-ness** *n.* — **pre-figurement** *n.*

pre-fix (for *v.* prē'fiks; also prē'fiks; for *n.* prē'fiks) *vt.* [ME *prefixare* < MFr *prefixer* < L *praefixus*, pp. of *praefigere* < *prae-*, before (see **PRE-**) + *figere*, to fix] 1 to fix to the beginning of a word, etc.; esp., to add as a prefix 2 [Rare] to fix beforehand — *n.* [ModL *praefixus* < neut. of L *praefixus*: see the *v.*] 1 a syllable, group of syllables, or word joined to the beginning of another word or a base to alter its meaning or create a new word [pre- is a prefix added to "cool" to form "precool"] 2 a title that is placed before a person's name, Dr. 3 an identifying letter or number placed before another number, etc. — **pre-fixal** *adj.* — **pre-fixally** *adv.* — **pre-fixion** *n.*

pre-flight (prē'flit') *adj.* coming before a flight or the flying of an aircraft [pre-flight instructions]

pre-form (prē'fōrm) *vt.* to form in advance

pre-formation (prē'fōr mā'shən) *n.* 1 previous formation 2 *Biol.*

former theory that eve organism in miniature, **pre-frontal** (prē frunt' front of a structure of the brain) **pre-ganglionic** (prē'g nerve fibers going from the brain to the spinal cord) **preggers** (prē'gəz) *adj.* **pregnable** (prē'gə-nə b) **prenable** < MFr < *prae-nabile* 1 that can be injured; assailable or vulnerable **pregnancy** (prē'gə-nān period of being pregnant) **pregnant** (prē'gə-nant) **pregnantis**, heavy with OL *gnasci*, to be born (ing in the uterus; that mentally fertile; prolific fruitful [a pregnant cat] **pregnant silence** 5 *fig.* **pre-heat** (prē'hēt') *vt.* to heat beforehand **pre-hen-sile** (prē hen'si L *prehensibilis*, pp. of *prehendere*, to grasp, esp. by wrapping or for monkeys — **pre-hen-sile** **pre-hension** (prē hen's grasping 2 mental apprehension **pre-his-to-ri-an** (prē'his prehistory **pre-his-toric** (prē'his tory Also **pre-his-tor-i-** **pre-his-tory** (prē'his-tā learned from archaeology leading to an event, crisis **pre-ignition** (prē'ig ni ignition occurring before spark plug fires **pre-judge** (prē'juj') *v.* **praejudicare: see **PRE-** or without all the evidence **judge-ment** *n.* **preju-dice** (prē'joo d **praejudicium** < *prae-judex* (gen. *judicis*), JU the facts are known; unfavorable 2 a) a judgment that contradicts it; unfair b) the holding of intolerance, or irrationalities, etc. 4 injury action of another or harm, as by some judgment; prejudice; bias — **with** 2 *Law* without dismissal often with *to* **SYN.** — **prejudice** implies opinion, usually an unfavorable one, usually motivated by favor of or against some kind; **partiality** implies strong fondness or attachment; **predilection** is one's background, temperance [he has a predilection for jazz] **preju-dicial** (prē'joo d harm; injurious; detrimental **pre-lacy** (prē'ə sē) *n.* 1 a) the office or rank of a prelate b) a hostile term: also **pre-lap-sar-ian** (prē'lap Man 2 old-fashioned **pre-late** (prē'lat) *n.* [M orig., ruler < pp. of I ranking ecclesiastic, as lat'ik, pri-) *adj.* **pre-lect** (prē lekt') *vt.* before, lecture: see **PRE-lection** *n.* — **pre-lector** *n.* **pre-li-ba-tion** (prē'li bā *prae-*, *PRE-* + *libare*, to drink) **pre-lim** (prē lim', pri-; *prelim abbrev.* preliminary **pre-lim-i-nary** (prē lim'i *praeliminaris* < L *pro limen*, threshold (see main action, discussion paratory — *n.*, *pl.* -na preliminary step, process contest or match before **pre-lit-er-ate** (prē'lit'ar a society not having a **Pre-log** (prē'lōg'), Vlac slavia **pre-lude** (prē'yōōd; *ai* **Prélude** < ML *praeludare*, *prae-*, *PRE-* + *ludere*,**

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